

The University of the Arctic Newsletter

SHARED VOICES

2008

International Polar Year Legacy Edition



UNIVERSITY OF THE ARCTIC



Polar bear in Nordaustlandet, Svalbard / **Amanda Graham**

The University of the Arctic Shared Voices Newsletter

International Polar Year Legacy Edition 2008

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Table of Contents

4	Introduction Lars Kullerud and Outi Snellman
6	International Polar Year Legacy Statement from the University of the Arctic Board of Governors
9	The International Polar Year Dave Carlson
10	UArctic's Role in the Fourth International Polar Year Elena Sparrow
11	A View from the South Pole Sandra Zicus
12	The Top Quarter Lars Kullerud
14	Fostering the Development of Future IPY Scientists Jenny Baeseman
15	The UArctic Studies Catalog- Right Moment to Catch the Aftermaths of IPY! Camilla Hansen
16	Old Livelihoods in New Weather: Arctic Indigenous Reindeer Herders Facing the Global Challenge of Climate Change Anders Oskal
18	Where is UArctic Anyway? Outi Snellman
20	Chinese Students Visit Svalbard and Norway Elise Strömseng and Eva Therese Jenssen
21	Teachers in the International Polar Year Elena Sparrow
22	IPY at the Sixth International Congress of Arctic Social Sciences in Nuuk: A Milestone along a Continuing Journey Yvon Csonka and Igor Krupnik
24	Kinnvika Ice Core Drilling: Nordic Cooperation under IPY John Moore
25	Engaging Northern Canadian Youth: The Canadian Youth Steering Committee and their Time Capsule Project Harry Borlase
26	2007 IPY International Sea-Ice Summer School in Svalbard a Success Barb Hameister
28	Understanding the Effects of Global Change on a Fading Language Jenn Wagaman and Lisa Scerbak
30	Integrated Graduate Research Training on Resilience and Adaptation of the Arctic System Gary Kofinas and Karen Hibbard-Rode
30	The UArctic Atlas: Giving the World a Circumpolar View Scott Forrest
32	IPY IV: Context and Compromise- An Online Course Amanda Graham
34	North by 2020: A Forum for Local and Global Perspectives on the North North by 2020 Executive Committee



Introduction

Lars Kullerud, President of the University of the Arctic

Otti Snellman, Director of Administration and University Relations, University of the Arctic

Today's world is more dependent on the North than ever- a dependency that will only grow in the future. The North represents invaluable resources, globally vital ecosystems, an important platform to conduct research and understand our dynamic planet, as well as a dream of a different land: a pristine part of the earth for the mind to explore.

The North has been a homeland for people for thousands of years. For a few centuries it has been an arena for exploration, exploitation, and land claims by national states. The last decades have given us a melting of the political ice but also melting of sea ice from increased climate change. The Rovaniemi process, started in 1991, led to a unique partnership between governments and indigenous peoples to safeguard the Arctic environment and ensure the sustainable development of the region through what is now the Arctic Council. Now, 17 years later, it is more imperative than ever that indigenous and state political leaders work in cooperation with local communities, academic institutions and the private sector to build a resilient and strong North.

The academic community has practiced international cooperation in Arctic research since the first Polar Year 125 years ago. It laid the groundwork for a century when the Arctic had become an increasingly attractive arena for scientific research. The current International Polar Year represents hope for a future with intensified research and increased attention to the Polar Regions, including the human perspectives. The people of the North are no longer only an object of study; instead, indigenous peoples and other northerners together take active part in the development and governance of the region, and in defining the research agenda for the North, with "shared voices."

As a source of vital resources, the North for centuries has been managed as a distant "colony" within each nation state. It has been a place where one sends experts, doctors, managers, workers and teachers, while resources and young northerners are sent to the South. The new international cooperation, different types of local governance, and the establishment of new higher education and research institutions, all show hope for a new future. The North can become a region which is empowered to provide goods and services globally on equal terms with other regions in the world.

Practically all northern universities, colleges, and other organisations engaged in higher education have organized themselves into the University of the Arctic, a network of 116 members. The Rectors of UArctic higher education institutions have signed a declaration, the UArctic Charter, which demonstrates an unparalleled will to share resources and goals across national and institutional boundaries to ensure research, education and training in and about the North. The ambition is for a dynamic UArctic that uses its members' resources and capacity in a flexible and adaptive manner to meet the needs of the North as it changes over time. UArctic members are ready to take a collective responsibility as leaders of research and education relevant to northern communities both to serve the North's internal needs as well as to equip the North with the capacity to serve the rest of the planet. In UArctic, through its members, the North has the higher education opportunities needed to ensure leadership and competence to develop its own relevant strategies for knowledge generation and sharing, as well as for education.

This magazine provides insights and examples of how the higher education institutions of the North will take the torch from the International polar Year and ensure a IPY legacy that builds a North which is ready to take leadership in future Polar Years. The photos used are not always directly linked to the story, but is our way of taking the reader through a visual journey through our North.



Arctic tern in Svalbard / Lars Kullerud



International Polar Year Legacy

Statement from the University of the Arctic Board of Governors

The International Polar Year (IPY) has been a success in engaging public interest about polar issues; it has engaged the whole science community in identifying important research topics, and has also been successful in focusing research investment in polar issues. It is evident that the IPY will leave behind important high-quality research, valuable networks, research facilities and observation networks. In the years leading up to the next IPY, maybe 25 years from now, we can assume that this IPY will be remembered for the strategic choices of including the human dimension, recognizing indigenous and traditional forms of knowledge and for enabling the creation of strong networks.

The University of the Arctic has been the lead agent for IPY Higher Education in the Arctic and has grown during IPY into a unique and complete network of higher education institutions in the North which enhances northern research and education cooperation. UArctic's 116 members include practically all of the universities and colleges in the Circumpolar North and several important research institutions and indigenous organizations. Totalling over 600,500 students and some 50,000 academic staff, the UArctic network provides a unique and complete northern university and research network built by its members and with support from governments ready to take on a leadership role in bringing the energy from the IPY to a new level and into a new era.

UArctic is in a unique position to provide sustainable follow up to the IPY investment in training and research in the North by its thematic, and issues-based, cooperation which brings out the best among UArctic members in specific areas of expertise. UArctic encourages and enables the development of the next generation of northern leaders, people who are born and educated in the region. UArctic also encourages the design of academic programs and services that are based on the needs of the region. UArctic promotes the recognition of traditional knowledge as an integral part of northern research, training and education and stimulates further cooperation to foster the important role of traditional and indigenous knowledge in the northern knowledge base. UArctic provides cost-effectiveness through shared training, education and thematic research cooperation.

Examples of IPY legacy relevant areas where UArctic has been active

- Establishment of APECS (Association of Polar Early Career Scientists). This origination should be supported, for example by giving it concrete roles in polar scientific cooperation. It also has the potential to be a natural network of young polar researchers beyond IPY. APECS and UArctic will work together to facilitate the design and implementation of training workshops for early career scientists.
- The growth of UArctic to a complete network of Arctic Higher Education institutions has been achieved during IPY. With over 100 members, totaling over 650,000 students, UArctic provides a strong northern science and education network.
- The UArctic GoNorth program and the UArctic Studies Catalog. The Catalog already features more than 1000 Arctic study opportunities for students from southern latitudes, including regions where polar awareness is considered low. The Catalog is a listing of polar learning resources and opportunities specifically for tertiary education that encourages open sharing of resources and limited duplication of effort.
- The UArctic Graduate program promotes circumpolar delivery of shared or joint master programs – an efficient way to ensure quality higher education in the North.
- The UArctic Rectors' Forum is a unique meeting place for northern university and college leaders that will be well placed for strategic choices in how the North tackles future challenges.
- The new system of UArctic Institutes will be piloted in the United States with the UArctic institute for Circumpolar Policy, hosted by Dartmouth College together with UAF and Urbana University.
- The UArctic Field School and PhD networks target students who are currently in-



Nenets Child in Yamal, Russia / Lars Kullerud



Ice core researcher while in Svalbard / Emilie Beaudon

involved in polar studies and encourages aspiring and young researchers to pursue polar related careers.

UArctic has worked with IPY via its programs and leadership and in particular through the Office for International Polar Year (IPY) Education and Outreach located at the University of Alaska Fairbanks, who has formally led the UArctic IPY cluster. This has been supplemented by efforts from the Field School and IPY coordinator at University Centre at Svalbard, UNIS. The leaders of those two offices together with the UArctic President have taken an active part in the International IPY Subcommittee on Education and Outreach and lead the higher education element of that group.

As we approach the end of the International Polar Year (IPY) it is time to ensure that this impressive initiative in the history of polar research does not just end, but rather represents a start of a new era in the way we develop and share knowledge about the polar regions and about how the rest of the planet depends on these regions.

The University of the Arctic is ready to take the lead to provide stewardship for a sustainable long-term legacy in higher education and research cooperation in the Circumpolar North that fosters the leadership of the next IPY. Further, UArctic is committed to ensuring that the northern universities and colleges become key players in the development and sharing of knowledge in and about the North and that such knowledge is based on indigenous and local traditional approaches as well as modern science approaches to knowledge generation and sharing.

UArctic will provide leadership in close cooperation with the global polar research community, in particular the two major polar science organizations, IASC and SCAR, as well as IASSA. UArctic encourages the Arctic governments to start cooperating more closely to increase circumpolar cooperation to ensure maximum use of the good investments in Arctic Higher Education and Research. This also includes improved use of the growing Arctic research capacity in the North through the work of the Arctic Council working groups.

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A party of hunters from three Arctic communities and scholars from several disciplines exchange their knowledge about sea ice in the field (IPY project SIKU, Clyde River, April 2008) / **Yvon Csonka**.



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- Mary Simon
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- Emőke Szathmáry



The International Polar Year

David Carlson, Director of the IPY International Programme Office, Cambridge, UK

As Director of the IPY International Programme Office, I receive favourable impressions of IPY's impact as I attend polar events and conferences and visit polar organizations. Within this community I encounter enthusiasm, appreciation, and, already for many months, certainty at IPY's success and legacy. However, the planners of IPY set a goal for IPY's impact that goes well beyond the polar research community:

"... an exceptional level of interest and participation from polar residents, schoolchildren, the general public, and decision-makers, worldwide."

We might summarize this IPY legacy as 'an informed public' and recognize that the targets of our information campaigns lie outside familiar polar groups.

IPY generates many invitations from outside the polar community. I have accepted opportunities to speak to teachers in Chicago, Liverpool, Vienna and Toledo, parliamentarians in Kiruna, Brussels and Washington, engineers in Tampere, Boulder and Mountain View, ocean advocates in Malta, science bureaucrats in Suzhou, Rome and Paris, students in Bozeman and Tromsø, and the public in Barcelona, Kota Kinabalu, Ushuaia, Monterey, Rock Island and Kautokeino. These audiences, of several thousand individuals in total, gathered to hear about IPY without pre-conceived notions of its success or impact. How does this group view the legacy of IPY?

I encounter three pervasive attitudes. First, people around the world, regardless of age or profession, feel an emotional connection to polar regions, largely, for most, through compelling polar images. Second, most people understand the basic concept of change in polar regions as an early consequence of a warming planet. Although IPY may reinforce the second attitude, both views occur and seem likely to persist independently of IPY.

A third view relates directly to IPY: the public perceives IPY as science in the right place at the right time. Whether deserved or fortuitous, this perception will not endure. The systems we study, science itself, and human needs for science will all change. But a renewed perception of science as essential, relevant and accessible can endure. IPY can show science as a creative and cooperative approach to complex and challenging problems. In this endeavour, and in this message, the integrated ideals and services of the University of the Arctic can play a large role. Success will represent a powerful IPY legacy.



References: International Council for Science. 2004. *A Framework for the International Polar Year 2007-2008* produced by the ICSU IPY 2007-2008 Planning Group.



David Carlson, Director of IPY Programme Office, in Kautokeino



Fishing village in Lofoten, Norway / Outi Snellman

UArctic's Role in the Fourth International Polar Year

Elena B. Sparrow, Director of UArctic IPY Higher Education and Outreach, University of Alaska Fairbanks

The University of the Arctic (UArctic)'s involvement in the fourth International Polar Year (IPY) began long before the official start of IPY 4, with the submission of an Expression of Intent (Eol) for an IPY project "University of the Arctic: Providing Higher Education and Outreach for the IPY". The IPY Joint Committee of the International Council for Science and the World Meteorological Organization encouraged UArctic to develop and submit a full proposal that included and coordinated relevant Eols. The UArctic proposal was submitted in September and endorsed by the IPY Joint Committee in November 2005. Concurrently an office for the UArctic IPY Higher Education and Outreach was established at the University of Alaska Fairbanks. At the core of the eighteen-project cluster are UArctic and the International Antarctic Institute who are responsible for the coordination and delivery of higher education and outreach in the Northern and Southern hemispheres, respectively, during IPY.

The individual projects within the UArctic IPY higher education and outreach cluster use various approaches to target different audiences in the continuum of learning as a lifelong process: 1) primary and secondary students through teacher professional development workshops on science teaching and research; 2) undergraduate students via education and research experience; 3) graduate students through integrated education and research; 4) early career scientists/university faculty via professional development workshops; and 5) communities and the general public via continuing education/adult education through either formal or informal ways.

Likewise, UArctic's collaborative higher education and outreach programs hosted by member institutions in Arctic countries are many and varied, providing rich learning opportunities for northerners and the greater global community: 1) The Arctic Learning Environment Program helps northerners overcome physical distance and cultural barriers to learning in the North; 2) The Circumpolar Studies Program uses academic and indigenous knowledge, and multi-method delivery in teaching about the North via courses held around the world in the classroom, in the field and online; 3) The UArctic Field School program composed of short, thematic, field-based courses, provides experiential learning in northern locations; 4) The GoNorth program provides the opportunity for non-Arctic residents to go north to the Arctic to learn about the Arctic; 5) The North2north program is a multilateral exchange program that facilitates student mobility in circum-Arctic higher education; 6) The Northern Research Forum promotes and enables open discussion among policymakers, business people and other interest groups, the international community, and the research community; 7) The Open Learning program addresses the need for short-term skills training needed by northern residents; 8) Graduate Networks facilitates the education of young researchers through sharing of experience and knowledge to promote regional cooperation and identity, build an academic community, and develop opportunities for education and communication with policy-makers.

UArctic's education programs together with the other IPY Higher Education and Outreach cluster projects have global linkages and reach, creating a unique network for higher education and outreach during IPY and beyond.



Swedish ice breaker Oden at 86 degrees North / Halfdan Carstens

Adélie penguins along Antarctic Coast / Adrian Boyle



Mikkel Berg / Ingunn Marie Nordlie



A View from the South Pole

Sandra Zicus, Project Officer, International Antarctic Institute, Australia

More than 60% of the Earth's fresh water is locked up in the massive ice sheets of Antarctica. Oceanographic and atmospheric processes in the Southern Ocean around Antarctica play an essential role in the regulation of global climate. The Southern Ocean also hosts a vast and complex marine ecosystem that supports an international fishery. The continent itself is a place of superlatives – the highest, coldest, windiest place on Earth.

Almost 50 years ago, the signing of the Antarctic Treaty recognized the value of this unique region. The Treaty set Antarctica aside as a place for peace and international scientific collaboration. The succeeding decades have shown that this cooperation and sharing of knowledge are essential for the continued protection of this invaluable resource.

Fostering the next generation of polar researchers is one of the primary goals of the current International Polar Year (IPY). The International Antarctic Institute (IAI), launched in July 2006, is helping to fulfill this goal.

The IAI is a worldwide consortium of universities and agencies that provide university-level education in Antarctic studies, and that also engage in polar research. It currently involves 20 diverse institutions in 13 countries – Australia, Brazil, Chile, France, Germany, Italy, Japan, Malaysia, New Zealand, Norway, Spain, United Kingdom and United States of America.

The goal of the IAI is to facilitate student and faculty exchange programs and allow students to earn credits toward their university degrees by taking courses or participating in field studies through any of the member universities. This provides member institutions access to an unparalleled range of Antarctic education and research programs.

An international Academic Committee has been established to develop cross-crediting arrangements among the universities and to determine acceptable combinations of courses and programs for a jointly-badged Master's degree consisting of 50% course work and 50% research.

The University of Tasmania is offering the first of these degree programs, specializing in polar marine biology, beginning this July. Other member universities including Hamilton College (USA), University of Siena (Italy) and University of Barcelona (Spain) will be developing another Master's program with a focus on polar geosciences.

The Secretariat is currently housed at the University of Tasmania.

IAI director **Andrew McMinn** (andrew.mcminn@utas.edu.au)

IAI coordinator **Patti Virtue** (p.virtue@utas.edu.au)

www.iai.utas.edu.au

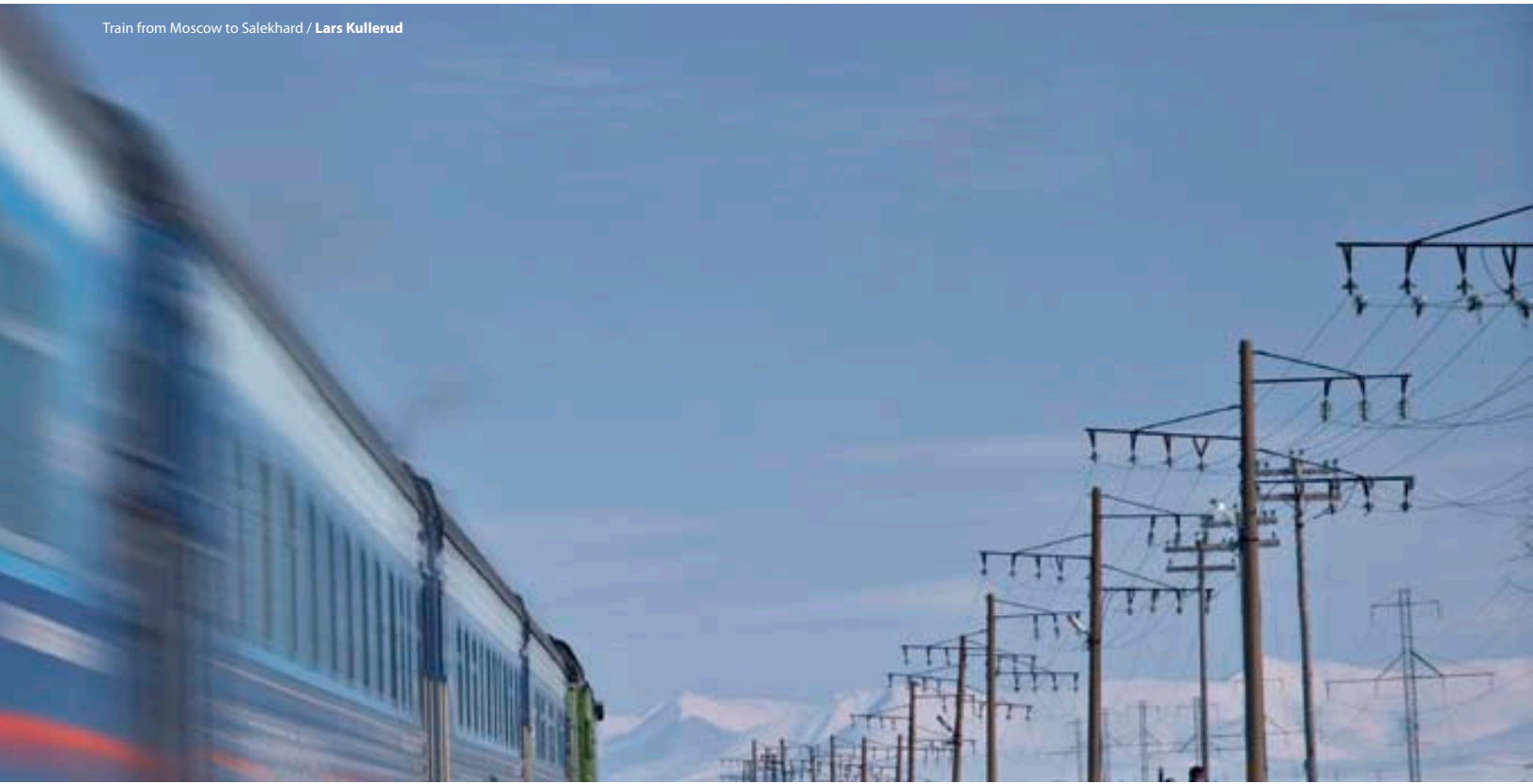
Student Profile

Mikkel Berg

Mikkel Berg has spent a lot of time thinking about what brings southern students 'north'. Berg, a UArctic Student Representative on the Board of Governors and member of the GoNorth Program Team, shares some insight into what he thinks are some of the opportunities and advantages southern students have when studying in the north, including UArctic's GoNorth program:

"Firstly, many of our institutions offer courses and programmes that are simply not available down South. Secondly, if you're going to study the issues of a certain region you should live there at least for some time – there's a certain kind of intuitive knowledge that you pick up by experiencing [the area] first hand. Thirdly, studying the North from the South may make students see the North as a peripheral 'object'. Going North forces the realization upon students that there are people to whom the North is not the periphery but the centre, the realization that there are communities and individuals whose lives are deeply affected by the events they study - events that in turn may be impacted by the students' later academic production and other activities in the spheres of politics and economy. And finally, I have talked to many students from the South that moved to the region because they were drawn to the landscape, the climate and the culture up here."

Train from Moscow to Salekhard / Lars Kullerud



The Top Quarter

Lars Kullerud, President of the University of the Arctic

The Arctic is a comprehensive network of literally all higher education institutions within what is generally understood as the north of North America, Northern Europe and Russia. UArctic members span some 38 million square kilometres, the top quarter of the Earth's surface. The North has a highly dispersed and skilled population and is rich with resources and cultures. Today the top quarter of the world faces rapid changes due to political and technical developments as well as climate change.

The norths of the world face many similar challenges. They need to build capacity for daily governance, develop human as well as natural resources in a sustainable way, create jobs and develop opportunities for their population. Furthermore, they need to provide the world with vital resources like lumber, metals, oil and gas, and services like transportation routes, pristine nature for recreation, as well as local knowledge about the North. These developments need to be done in a region with extremely low population density, and a history of "colonial style" management by the national capitals.

To meet these challenges, governments of the Arctic countries have established different kinds of higher education institutions in the North. The responsibility of these institutions range from training students for the local job market through professional education, to science based universities, which are often modelled on higher education institutions in the southern parts of the country. Many northern institutions are examples of how higher education establishments can partner with local needs to build high quality professional education and world class research facilities. Unfortunately, in each of the Arctic countries, the North has generally been perceived as periphery, and investments in higher education have historically been done from a 'help' and 'frontiers' perspective.

There is a global trend towards bigger units and more centralization both in the private and public sectors. This trend is also evident in higher education: larger universities provide the benefit of more comprehensive programming, the ability to develop world class research in some areas, and the capability to promote

themselves in a competitive research and education market. This strategy, based on the need to be robust, dynamic and well known in one's own right is resource demanding and, therefore, a driver towards larger entities. The less populated North cannot easily host comprehensive universities and professional education institutions with a size that can match this development. It is, however, not the total size of a university which determines its excellence in a specific area at a given time, as good research groups tend to be modest in size. Also, smaller institutions may be functional hosts for world class research and education, as is demonstrated by some of UArctic's members. In addition, a circumpolar network of smaller and larger institutions can form the critical mass for expertise in any field by their collective size. Through a collaborative network, partnering universities will be better equipped than any single institution, even if large, to develop and maintain world class excellence in several disciplines.

A network of smaller and larger institutions can provide quality education by sharing faculty, developing specific research proficiencies, improving the mobility of expert education and research projects between institutions and national borders, as well as by utilizing the competencies and profile of each member. By doing this, the network makes participating members more attractive for students and faculty, more pronounced leaders in research projects, and also more attractive partners, be it in partnerships with the private sector or with regional governments. The University of the Arctic has set up mobility, undergraduate and graduate as well as research cooperation programs that encourage its members to do exactly this.

The University of the Arctic is unique because it allows for a dynamic development through this kind of cooperation. Smaller learning centres can provide relevant quality education for people who seek higher education within their community or region, based on curriculum developed through circumpolar cooperation. The same learning centres may be developed to serve the infrastructure needs of shared research projects and thus benefit universities that do not

have access to such infrastructure. A network of this size is also able to develop relevant new curriculum for a changing North.

Institutions which serve smaller populations have the obvious benefit from a network as they are able to provide a wider set of educational opportunities for students. By doing so, communities are awarded with relevant experts who also have local knowledge. This also translates into the business sector where a competent workforce is trained and secured. The value of smaller institutions for both larger universities and other partners is increased, indicating to governments that investments in local higher education are important social and economic investments.

Within the UArctic network, groups of experts working on issues relevant to the North can be composed of teams from across several institutions. Inspired by how the Polar Year has been organised, experts from institutions can use the shared capacity of the UArctic network to attract experts, funding, and research projects. Formal and informal networks like this are common in specific research communities; however, the uniqueness of the UArctic network is that the institutional framework is organised to facilitate these processes. Thus, the UArctic network ensures that all circumpolar expertise in a specific area can work together in a Thematic Network, which is then presented externally as a clear and known shared identity.

There is a common movement towards the development of larger institutions. These institutions are assumed to provide clustering which fosters innovative ideas and who have strength to make strategic choices. As argued above, a network can provide a different, perhaps a more flexible, framework to develop and foster new ideas and secure dynamic and adaptive education and research programs. Another argument in favour of larger institutions is that the administrative tasks can be made more efficient. However, the low population density of the North limits the benefits of physical co-location. A network does, however, also make it possible to share administrative and infrastructure costs like joint publishing houses, shared infrastructure investments, shared research stations, as well as common marketing ventures. UArctic has several concrete examples of providing such services to its members: the UArctic Studies Catalog, UArctic Press and the GoNorth marketing program to name a few.

The UArctic network is a dynamic tool for cooperation among higher education institutions in the North, with support and leadership from the peoples of the North. As such, it can be an efficient agent for change. This change is towards increased self-governance capacity, change towards new ways to living in the North, change towards a better managed North- change which will eventually benefit the entire world.

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Lars Kullerud in Nordaustlandet, Svalbard / Arne Benjaminsen



Longyearbyen, Svalbard / Lars Kullerud

Fostering the Development of Future IPY Scientists

Jenny Baeseman, Founding Director for the Association of Polar Early Career Scientists (APECS) International Arctic Research Center, University of Alaska Fairbanks, US

The 4th International Polar Year arrives just as dramatic changes are occurring in the Polar Regions, which comprise 14% of our Planet and are home to over 3 million people. Scientists are challenged with conducting innovative, transformative, international and interdisciplinary research to increase our understanding of these cold, harsh, yet delicate ecosystems and their connection to the global system and communicate the process, results, and uncertainties to a worldwide audience.

The Association of Polar Early Career Scientists (APECS) was established by young researchers to address these needs and as a legacy of IPY4 Project 168, the International Youth Steering Committee. APECS is an international and interdisciplinary organization for undergraduate and graduate students, postdoctoral researchers, early faculty, educators and others with interests in Polar Regions and the cryosphere. APECS aims to raise the profile of polar research by working with mentors to provide a forum for young researchers to: develop international partnerships and understand cultural, economic, and political differences; advance interdisciplinary collaborations by networking beyond traditional disciplinary and institutional boundaries; learn cutting-edge technological and analytical tools; improve science communication; learn to navigate the logistical complexities of polar field sites; and answer the needs of early career scientists involved in polar research.

In September 2007, the first APECS Council meeting was held in Sweden to set forth the main activities of the organization. As a result, APECS will be hosting a number of career development workshops in the coming year in conjunction with larger conferences: SCAR/IASC IPY Open Science Conference, Northern Research Forum, International Congress on Arctic Social Sciences, and others. A workshop on permafrost techniques was held in November through the Otto-Schmidt Laboratory and another is planned this fall on marine ecosystems. The Education and Outreach Committee is working on a guide to conducting effective outreach featuring examples of projects conducted by young researchers. These activities are providing young researchers with the tools to begin their careers as members of the global polar community and thus understand the importance of working outside national and disciplinary boundaries. For more activities and outcomes visit the website.

APECS works closely with the University of the Arctic and other members of the IPY Tertiary Education Subcommittee, including the IPY International Program Office, to provide resources and training for young investigators and students. APECS is continually interested in developing partnerships that provide opportunities to engage and foster the development of future IPY researchers.

For more information, visit: <http://arcticportal.org/apecs> or email APECSinfo@gmail.com.



International Antarctic Institute students on recent field course in Hokkaido, Japan / Umitaka Maru

The UArctic Studies Catalog – Right Moment to Catch the Aftermaths of IPY!

Camilla Hansen, Director, UArctic Studies Catalog, Scandinavian Seminar, Amherst, US

The UArctic Catalog is presented with a great challenge – to connect UArctic's programs and member institutions and their diverse profiles into a single on-line tool. However, according to Director of the UArctic Studies Catalog, Camilla Hansen, the project has a fully realistic goal of offering a 'one stop shop' for all higher education courses in and about the Arctic. Hansen continues:

"Our target group is students from all over the world, or those just around the corner who already live in the North. There are other initiatives that are attempting to create similar catalogs concerning other regions but they are not as extensive as the UArctic catalog aspires to be."

During the 3 year project (2008-2010) the UArctic Studies Catalog will be under development. The main goal for the online catalog is to provide information on all higher education courses and programs that are provided by the UArctic members on one website– regardless of their length, credits or subject. The main guideline for institutions participating in the catalog is that the institution itself has a strong northern geographical and cultural setting. The content of the courses (or programs) needs to have Arctic relevance and be offered only at that institution.

All of UArctic member institutions are invited to participate and contribute whichever courses and programs that the institution would like to attract to students. Courses may be for foreigners or domestic students, and they may also be long term or just a summer or field course. The Catalog will be a shared resource for UArctic members but also an identifiable information platform for all students and for student counselors.

When it comes to a more specific IPY collaboration resource, a possible future collaborator could be the IPY subgroup APECS, as well as other networks which have sprung from IPY's Education and Outreach groups. It is to our benefit in UArctic to 'seize the moment' which the IPY has provided during its years of activity.

The Catalog is one of the main foundations for a long lasting tool of IPY inheritance. One example of how to treasure that legacy is to grasp the public's expanding interest in the Arctic and climate change as well as legal issues by providing easy access to information about how and where to study these subjects. The marketing of the Catalog will be done through GoNorth and all possible information and communication channels will be used to reach students in different regions.

Hansen sees the future of the Catalog as a solid and thorough platform from which the attention and interest generated about the Arctic from IPY can be collected, marketed and preserved. The Catalog serves many purposes for all institutions involved; it will be to the benefit of smaller institutions to help in their student recruitment, while also being a valuable resource for every institution in managing their internal course information system, while larger institutions will hopefully see our efforts as an extension of their own recruit system. Hansen concludes by saying that:

"Finally, I see it as an honor and obligation as the Catalog Director to be the 'dream catcher of future professions and knowledge' for students that seek study opportunities in and about the North using our website!"

www.studies.uarctic.org

The UArctic Studies Catalog project is funded by Scandinavian Seminar Group:
www.scandinavianseminar.org



Blueberries / Veli-Pekka Laitinen

Old Livelihoods in New Weather: Arctic Indigenous Reindeer Herders facing the Global Challenge of Climate Change

Anders Oskal, Director of International Reindeer Husbandry, Kautokeina, Norway

Climate change is happening now, and is happening faster in the Arctic areas. At the same time, the Arctic is the home of many indigenous peoples, many of whom depend on reindeer herding as their livelihood. Independent of international discussions on the causes of climate change, reindeer herders themselves have chosen to focus on developing local adaptation strategies based on their traditional knowledge of land use.

Circumpolar Reindeer Husbandry

Reindeer husbandry has a long history in the Arctic. There are more than 20 different indigenous peoples in the Arctic that are reindeer herders. Reindeer husbandry is practiced in Norway, Sweden, Finland, Russia, Mongolia, China, Alaska, Canada and Greenland. This livelihood involves some 100 000 herders and around 2,5 million semi-domesticated reindeer, which graze approximately 4 million square kilometers in Eurasia. Reindeer husbandry is a circumpolar phenomenon, spread all across the Arctic and many different cultures. At the same time, its organization is remarkably similar everywhere it is found: it is a nomadic livelihood with family-based working communities, a typical indigenous way of life.

Impacts of Climate Change on Reindeer Husbandry

The change in environment as a consequence of climate change will have immediate direct and indirect effects on reindeer herders. Change of biodiversity in flora and fauna is an obvious example. Some species will come to replace others, even though such processes can take time. Still, such changes have already been documented by reindeer herders in their own environments (ACIA, 2004). One example of impacts is the spreading of shrubs into the barren tundra-areas. Shrubs may contribute to a hard packing of snow during the tough winter months, and could make access to food a challenge for reindeer. Changes in temperature could cause rivers to freeze later in the autumn and open earlier in spring, causing challenges for the annual migration of reindeer between different seasonal pastures.

Yet another change, and possibly one that could be felt more immediately, would be increasing climate variability. This could have an especially challenging effect during the critical winter-time, where increasing periods of mild weather with rain will be followed by cold frost periods, forming ice layers in the snow. Such ice-layers can block the reindeer's access to food on the ground. As reindeer live only on natural pastures, this often represents a "worst-case scenario" from the reindeer herders' perspective.

Climate change will also bring indirect effects for reindeer husbandry, through making the Arctic regions more accessible for humans. Human development and activities represent disturbances that have negative effects for the semi-domesticated reindeer

herds (UNEP, 2001). Especially female reindeer and calves tend to stay away from humans, physical installations and general human activity. This is a serious challenge for reindeer husbandry, typically representing irreversible loss of marginal pasture resources. In the last 50 years for example, around 25 % of the reindeer pastures of the Euro-Arctic Barents Region have in effect been lost due to human development (Tyler et. al, 2007). This challenge is also particularly relevant today, as the Arctic is said to hold around 25 % of the world's remaining undeveloped

petroleum resources. For instance, Yamal in Western Siberia holds about 90 % of Russia's gas reserves, while also being the largest reindeer herding area of the world.



EALÁT-Network Study: Reindeer Herding and Climate Change – Reindeer Herders' Vulnerability Network Study

The general goal of EALÁT-Network Study is to prepare reindeer herding communities and local authorities for climate change, in order to reduce these societies' vulnerability to such change. EALÁT focuses on adaptive capacity of reindeer pastoralism to climate variability and change and, in particular, on the integration of reindeer herders' knowledge in the

study and analysis of their ability to adapt to environmental variability and change. EALÁT has been endorsed by the Arctic Council, the International Polar Year and is also anchored in University of the Arctic.

The term "Ealát" is a word from the language of the indigenous Sámi people in Fennoscandia, meaning "good pasture". It is connected to the Sámi word "Eallu", meaning "Herd". Both these words come from the Sámi word "Eallin", which means "Life". In other words: Pastures are the foundation for the reindeer herd, and the reindeer herd is the foundation for the lives of reindeer herding peoples of the North.

EALÁT is an interdisciplinary, intercultural study that actively involves reindeer herders, linguists, lawyers, anthropologists, meteorologists, biologists, geographers, economists, philosophers as well as indigenous institutions and organisations, relevant industrial enterprises and management authorities. EALÁT is an attempt to understand the wide spectrum of issues related to climate change and adaptation of reindeer husbandry, addressing the knowledge challenges of circumpolar reindeer herders in a holistic manner.

Local competence building and capacity building in indigenous societies are major objectives of EALÁT, both through community-based workshops in local reindeer herding societies, education of PhD and Master students, and development of new communication tools (www.reindeerportal.org, www.reindeerblog.org and www.ealat.org).

EALÁT was launched in February 2007 and will be concluded by the end of 2010.

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Matt Strzelecki conducting research in Ebbabreen, Svalbard

Student Profile

Matt Strzelecki

Matt Strzelecki has been extensively involved with IPY research projects and the organizing of several international conferences. Strzelecki, a PhD student in the Faculty of Geosciences at UAM Poznan in Poland, is currently researching on the conditions, course and the results of morphodynamic processes in polar coastal zones with a special consideration of permafrost and sea ice processes. When asked how his experience as an IPY researcher will impact future polar researchers, Strzelecki responded that:

"All my thinking about polar science has changed during these amazing polar months. Today, I know that the globalized world needs strong and precise answers from the Arctic and Antarctic regions. In the face of global challenges like increased global warming, the rising gap between the richest and the poorest, as well as the secularization of society, these polar experiences help me in perseverance towards independence and hope. IPY is an amazing point in scientific, cultural, economic and social space and time, which gives young researchers inspiration to work twice as much."



Workshop in brigade 17, Yarsalinsky Sovkhoz, Yamal, Russia / Svein D Mathiesen

Where is UArctic Anyway?

Otti Snellman, Director of Administration and University Relations,
University of the Arctic

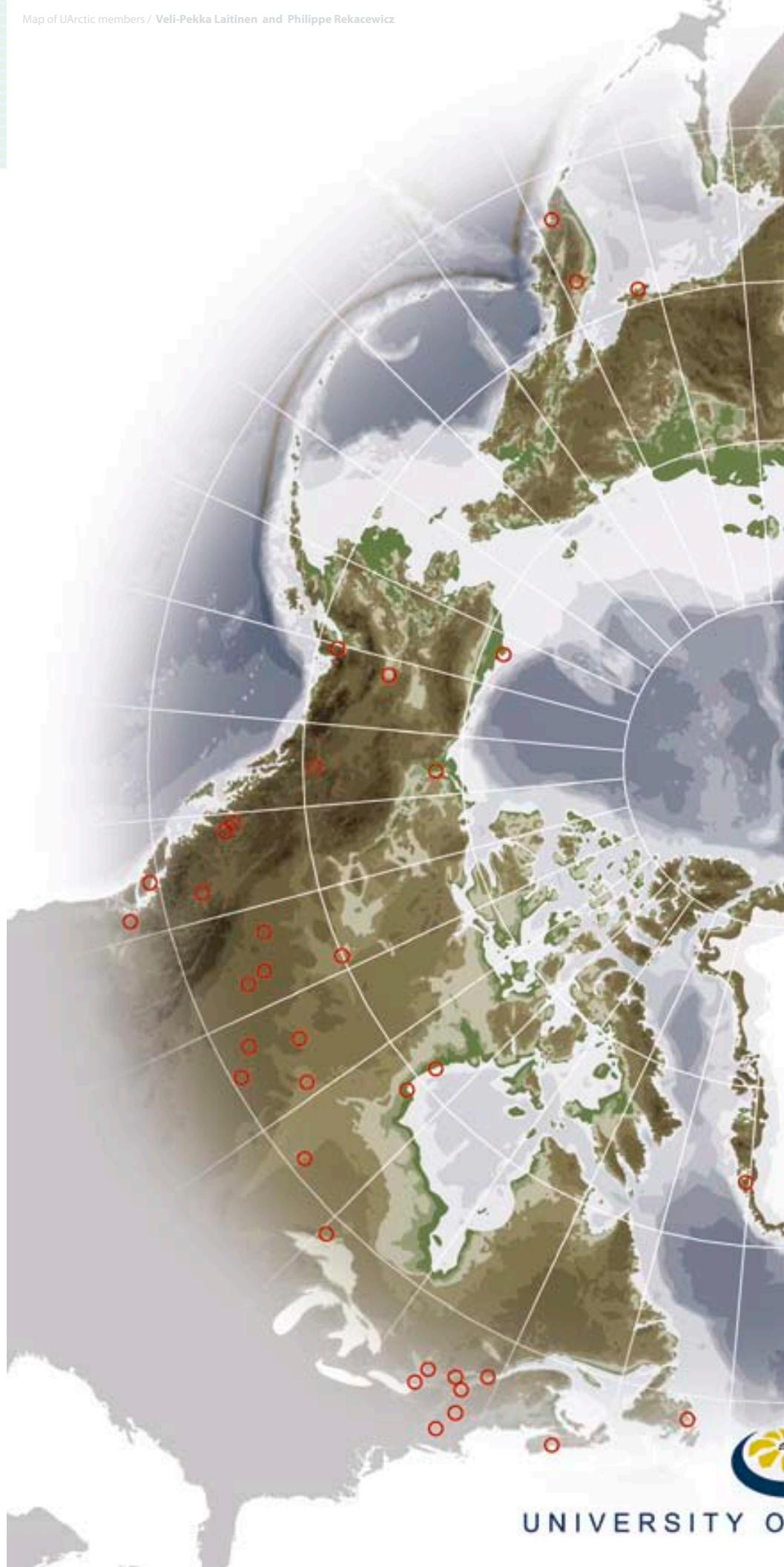
The University of the Arctic (UArctic), which started in 2001 as a small community of people and institutions with a common vision, is now a network of 116 organizations from all over the Circumpolar North. During its planning phase in 1997-2001, UArctic used the slogan "Where is the University of the Arctic" to spark interest in the concept of a distributed circumpolar organization. Today, you will be able to see the answer to this question on our membership map: pretty much everywhere in the North! Together, UArctic's members have more than 50 000 academic faculty and over 650 000 students. It is the sharing of their resources, both human and material, that has been the key to UArctic's success and growth: the incredible power of the network lies in how they complement each other, not only in what they have in common.

The original proposal for UArctic envisaged a "geographically dispersed institution that would combine the strengths of existing establishments by bringing together students and staff. Benefits would include the sharing of Arctic knowledge, costs of expensive and/or underused facilities, and expanded opportunities for access to education among the region's residents, in particular, for the indigenous peoples of the region." As witnessed by the map, UArctic's membership has increased steadily, and the administrative structures to support governance and programs have been consolidated. During that time, UArctic's programs and activities have progressed from the planning stage to full implementation.

Through its various programs, UArctic allows higher education institutions in the North to share their expertise on northern issues and to ensure the future of Arctic science, an area which will without a doubt continue to gain importance on a global level in the years to come. Through their engagement in programs, members work together for the sustainable development of the circumpolar region. Programs range from undergraduate and graduate academic programs to mobility programs, all of which allow members to offer their students broader and original opportunities for studying the North first hand.

The sharing of knowledge about the Arctic is not only beneficial for students, but also for Arctic researchers and educators. The UArctic Thematic Networks allow academics to be part of an open and constant dialogue on issues of shared interest, including issues like Global Change and Local and Regional Development in the North. In its new Strategic Plan 2008-2013, approved by the 116-member Council and the Board of UArctic in summer 2008, UArctic defines the Thematic Networks as the key mechanism for implementing the goals set by its members. Therefore, most UArctic activities will in the future relate to Thematic Networks in some way.

In addition to strengthening the existing links between researchers, UArctic also brings together important players in the area of northern higher education. The UArctic Rectors' Forum is another way UArctic members can unite their voices to in-





crease their presence and impact on a circumpolar and global level. The Second UArctic Rectors' Forum was organized in February 2008 in conjunction with the meeting of the Standing Committee of Parliamentarians of the Arctic region. The Rectors signed the UArctic Charter, laying out the principle commitment of members to the network and its activities.

The sharing of knowledge, opinions and resources in order to empower the North is at the core of UArctic's values, and therefore can not only be seen between its members, but also at an internal and organizational level. UArctic is a borderless, decentralized organization, which functions thanks to the collaboration of geographically dispersed offices, working closely together on a daily basis. These 13 offices are hosted by member institutions in five northern countries - Canada, Finland, Norway, Russia and the US - and they each have a specific mandate, ranging from program coordination to information management. The close collaboration between offices is another key to UArctic's success: dedicated staffs from across the Circumpolar North unite their expertise, their resources and energy every day to fulfil UArctic's mission of empowering the North through accessible and relevant education for Northerners.

With UArctic's constant growth and evolution, the power of the network will only gain strength, adding to the meaning of the motto "With Shared Voices." Thanks to the collaboration of its growing membership and of its offices, UArctic will continue to develop programs which encompass both conventional academic and traditional indigenous knowledge systems, for the benefit of northerners and their communities. UArctic has set its goals high—changing the future for the Circumpolar North— but, then again, we are quite many.

UArctic Facts:

- 116 members – higher education institutions, colleges, research institutes, other organizations
- Across the 8 Arctic countries: Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, US
- Founded in 2001
- Programs in the following Strategic Areas: Undergraduate Studies, Graduate Area, Skills Training, Mobility, Knowledge and Dialogue, and Capacity Building.
- 13 offices located in six northern countries
- Over 650 000 students and 50 000 academics in all member institutions combined

www.uarctic.org





Winners of Chinese IPY content enjoy trip to Svalbard / Elise Strømseng

Chinese Students Visit Norway and Svalbard

Elise Strømseng, Project coordinator, UNIS, Svalbard, Norway

Eva Therese Jenssen, UNIS, Svalbard, Norway

Since The International Polar Year (IPY) was launched on March 1st 2007, international cooperation in research, education and outreach has been a common aim for all IPY participating countries. And so, in the autumn of 2007, the University Centre in Svalbard (UNIS) was contacted by the Royal Norwegian Consulate General, with an enquiry of arranging a visit for Chinese undergraduate students in March 2008.

The visit to the Arctic region was one of the activities in the Chinese IPY Education and Outreach Programme initiated by the Polar Research Institute of China. The visit was launched as the prize for a national competition, where 10 students were to be selected to visit the Arctic.

The nation-wide competition started off in China on December 10th 2007. Over 3000 Chinese university students participated in the regional semifinals, where they were tested in a number of criteria, including general knowledge, English, physical abilities and cooperative skills. The national final was broadcasted live on national TV in mid-February 2008. The 10 winners, aging between 18 and 22, all came from very well-known universities, such as Fudan University in Shanghai and Hong Kong University of Science and Technology. The students also had a wide variety of educational backgrounds. During their visit, the students were accompanied by two Chinese TV-teams, journalists from nine well-known newspapers in China, and finally also the famous Chinese author Chen Danyan.

The study tour was planned by the Polar Research Institute of China. Other associates during the study tour were the Polar Exploration Office of China, the State Oceanic Administration in China, the Royal Norwegian Consulate General in Shanghai, the Research Council of Norway and the University Centre in Svalbard (UNIS).

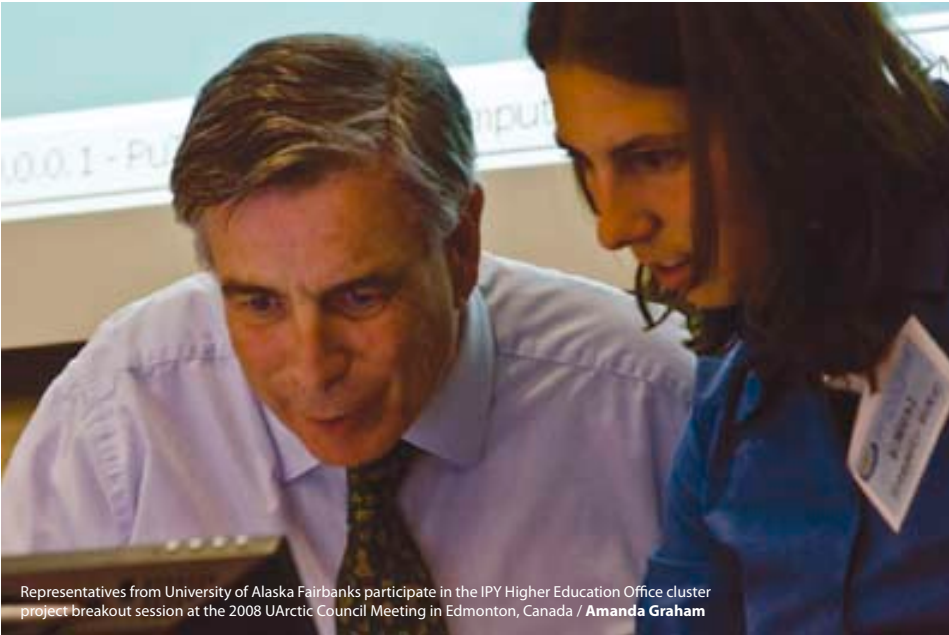
The purpose of the study tour to the Arctic region (Svalbard) was to make the students learn more about polar research and education, and also experience life in the Arctic region. The students started their Arctic visit in Oslo at the Research Council of Norway, before they set course for Tromsø (the Norwegian Polar Institute) and then finally Svalbard. During their stay at Svalbard/Spitsbergen from March 3rd – March 6th, they stayed three days in Longyearbyen and four days in Ny-Ålesund.

During the three day programme at UNIS, the students experienced everything from lectures on polar bears to a rock concert. The exclusive group were invited to an excursion to the EISCAT radar and the Kjell Henriksen Observatory (Aurora station), an IPY lecture as well as a visit to the Svalbard Museum. A brief lecture with safety information, something that is of high importance for students and researchers in the Arctic, were extremely popular among the students. Student were also particularly excited while visiting the shooting range and learning how to use a rifle, flare gun and also learning about the governmental regulations and the UNIS procedures for encounters with polar bears.

The visit in Longyearbyen coincided with the return of the sun to Svalbard following the dark season, thus there were a lot of activities and events in the town at the time. Hence, the students got to go to a rock concert with the Norwegian band Raga Rockers. A really popular experience!

The students were very satisfied with their trip. Wang Huanhuan (19) commented that, *"it is quite a different experience – it is a milestone in our lives"*. While Yang Meng (19) agreed saying that, *"polar life is so far away from our daily life, but this is a unique opportunity to learn more about the Arctic and we must just grasp it"*.

After their return to China, the students had to deliver a written scientific project from the trip to the high Arctic and also present this project at their home institution.



Representatives from University of Alaska Fairbanks participate in the IPY Higher Education Office cluster project breakout session at the 2008 UArctic Council Meeting in Edmonton, Canada / **Amanda Graham**

Teachers in the International Polar Year

Elena B. Sparrow, Director of UArctic IPY Higher Education and Outreach, University of Alaska Fairbanks, US

Many teachers across the globe are playing a crucial role in educating their students, colleagues and community members about the fourth International Polar Year (IPY). These teachers have been introduced to and are being supported in their IPY efforts through institutions such as the International Arctic Research Center (IARC) at the University of Alaska Fairbanks (UAF), a member institution of the University of the Arctic.

IARC anticipated the International Polar Year with an Arctic Expedition for twelve pre-college teachers from Canada, France, Germany, Russia, Sweden, United Kingdom and United States. It was held August 25 to September 21, 2006, concurrently with the fifth scientific cruise to the Arctic Ocean of the Nansen Amundsen Basins Observation System (NABOS) program at IARC, an IPY research project. The teachers have been sharing their Arctic expedition experiences in various ways by giving presentations to their peers and communities. They have also used their unique research expedition experience, climate change and IPY knowledge to develop curricular materials and courses such as a virtual field trip for their students as well as for professional development workshops for other teachers during IPY.

The IPY education outreach efforts are being continued and facilitated through many projects. One of them is the Monitoring Seasons through Global Learning Communities (also called IPY GLOBE Seasons and Biomes) project. The project is one of UArctic's IPY Higher Education and Outreach cluster projects at UAF through IARC and the School of Natural Resources and Agricultural Sciences, in which teachers and their students in Alaska and Argentina together with Arctic and Antarctic scientists participated in two IPY Pole to Pole videoconferences with a climate change focus, in 2007 and 2008. Each videoconference was followed by on-line web chats and forums that allowed teachers and students from other countries to participate.

Additionally, through international and regional professional development workshops, more than fifty teachers in polar and non-polar countries have learned how to engage their students in environmental or Earth science research by studying seasonal indicators in their biomes. Using standardized protocols and measurements developed in this IPY project as well as those in the Global Learning and Observations to Benefit the Environment (GLOBE) program.

In Alaska, USA, some teachers have also been working with Native elders in climate change related studies on seasons and biomes that their students are conducting. A teacher, three Alaska Native students and the Native elder who has been working with them, were invited to participate at the 2008 GLOBE Learning Expedition in South Africa where participants came from more than fifty countries. The Alaskan students presented their boreal forest study integrating indigenous Athabaskan Deg Hitan knowledge and GLOBE measurements. The teachers have been working with students in their classrooms, colleagues and the general public, and as part of IPY education and outreach activities. The number of teachers engaged in IPY is increasing through many other IPY projects and through the efforts of the international IPY Education and Outreach Subcommittee. The education outreach activities will continue the energy, excitement and understanding of polar regions and how conditions and changes in these regions are affecting the rest of the world and vice versa. Teachers will continue to play an important role in educating future scientists, decision makers and policy makers beyond IPY.



Photo of Larry Mishkar while surveying Old Longyear City in Svalbard / **Arron Kotlensky**

Student Profile

Larry Mishkar

Larry Mishkar, born and raised in Wisconsin USA, says that his first exposure to the Arctic and archaeology came as a youth while reading National Geographic Magazine. Several years later, his interest would be fuelled by a research opportunity in industrial archaeology in Svalbard with the Arctic Coal Company and Industrial Heritage in Svalbard Research and Training. Currently, Mishkar is working on a project involving political industrial history between the United States and Greenland, a topic that was developed after he discovered a collection photographs and narratives from several prominent early 20th century Arctic explorers. When considering how his work might affect other young polar researchers, Mishkar explains:

"I would be grateful if my work would influence the next generation of researchers to take up the torch, and continue and expand upon the work of industrial archaeologists working in the Arctic regions."

The old "colonial" town in Nuuk. The measuring instruments of the first IPY station (1882-83) were installed on the hill in the center / Yvon Csonka



IPY at the Sixth International Congress of Arctic Social Sciences in Nuuk: A Milestone along a Continuing Journey

Yvon Csonka, IASSA President, University of Greenland, Greenland

Igor Krupnik, Smithsonian Institution, IPY Joint Committee, IASSA Council

The Sixth International Congress of Arctic Social Sciences (ICASS 6) will take place at the University of Greenland in Nuuk, on August 22-26, 2008. This event has been endorsed as part of the IPY Scientific Programme, to be the main venue for showcasing, and networking, human and social science research during the Polar Year. The timing of the congress is aimed at keeping pace with a busy schedule for Polar Year activities, and is in conjunction with the opening of the newly expanded Ilimmarfik, a "University Park" which holds several university departments and units.

The congress will stretch over five days, the third being a special "IPY day" with plenary keynotes, a panel on the IPY legacy, a young researchers' forum, as well as other planned activities. About three hundred paper presentations are expected, in sessions covering all aspects of contemporary research issues, within and beyond the IPY programme. The large BOREAS international collaborative research program, an initiative of the European Science Foundation which has parts included in the IPY Scientific Programme, will be particularly well represented.

Main among several distinguished sponsors of ICASS 6 is the Greenland Home Rule Ministry of Education and Research, which establishes this congress as the country's major contribution to IPY. This, of course, is a fitting way for Greenland to signal the importance of human and social studies to the Arctic nation, and to showcase the capacity building in education and research in the Arctic itself.

The ICASS are high points in the life of the International Arctic Social Sciences Association (IASSA), created in 1990 with the main objectives to promote and stimulate international cooperation, and to increase the participation of social scientists in Arctic research. Over the years, IASSA has strengthened its collaboration with many international institutions, such as the International Arctic Science Committee (IASC), the University of the Arctic, and the Arctic Council, where it is a permanent observer. The previous International Polar Years, on the other hand, had no tradition of including research on human societies and cultures. At the dawn of the 21st century, the time is ripe to acknowledge the growing role of the human impact in the polar regions, and to finally embrace human and social scientists, as well as Arctic residents as full partners in the new International Polar Year initiative.

IASSA entered the IPY planning relatively late; but it quickly became a full player in the IPY 2007-2008 process. At ICASS 5 in Fairbanks, Alaska in May 2004, the IASSA General Assembly adopted two resolutions that endorsed the plans for IPY and argued for a more active role for social scientists and polar residents in its preparation and implementation. The Assembly also established a special international IASSA-IPY liaison group of scholars from ten nations, which was tasked to foster cooperation with international bodies in charge of the IPY planning, particularly the IPY Planning Group under the International Council for Sciences (ICSU). Around that time, many international agencies (such as the Arctic Council, ICC, IASC, and others), argued strongly for a more prominent role of studies relevant to the needs and interests of polar residents and local communities.

Based upon the recommendation of IASSA, a new key research theme and an associated 'interdisciplinary observational strategy' were added to the IPY 2007–2008 science framework endorsed in September 2004:

Research Theme #6: To investigate the cultural, historical, and social processes that shape the sustainability of circumpolar human societies, and to identify their unique contributions to global cultural diversity and citizenship.

Observational Strategy # 6: To investigate crucial facets of the human dimension of the polar regions which will lead to the creation of datasets on the changing conditions of circumpolar human societies.

IASSA nominated two social scientists, Igor Krupnik and Grete Hovelsrud, to serve on the IPY Joint Committee that supervises the implementation of IPY 2007–2008. Social scientists and representatives of organizations of Arctic residents were appointed to many national IPY committees and to the IPY subcommittees. In 2005–2006, over sixty proposals in social and human research, education, and outreach that targeted polar communities were endorsed by the IPY Joint Committee. Over 30 initiatives eventually received national and international funding and are now being implemented as a part of the overall IPY program. As a result of these and other developments, for the first time in the 125-year history of Polar Year ventures, IPY 2007-2008 has a designated field for human and social studies. It also explicitly acknowledges the crucial role of polar residents and indigenous people in polar research. The International Congress of Arctic Social Sciences, in August 2008, will be but one more milestone along a journey started by the creation of IASSA eighteen years ago.

A more detailed story of the inclusion of human studies in IPY can be found in:

Krupnik Igor, Michael Bravo, Yvon Csonka, Grete Hovelsrud-Broda, Ludger Müller-Wille, Birger Poppel, Peter Schweitzer and Sverker Sörlin, Social Sciences and Humanities in the International Polar Year 2007-2008: An Integrating Mission, InfoNorth, Arctic 58(1): 91-101.

Hovelsrud, Grete K. and Igor Krupnik, 2006, IPY 2007-08 and Social/Human Sciences: An Update, InfoNorth, Arctic 59(3): 341-348.

**ICASS 6 - www.icass.gl
IASSA - www.iassa.gl**



Greenlandic seal / Staffan Widstrand



For the first time, students received their degree in the new University building, in March 2008 / Ilisimatusarfik

Kinnvika Ice Core Drilling: Nordic Cooperation under IPY

John Moore, Kinnvika Scientific Leader, Arctic Centre & Thule Institute, Finland

IPY Kinnvika is a large cooperative project built mainly from the Nordic countries, but with partners from many other countries, particularly Poland, Germany and UK. Kinnvika is the site of the Swedish-Finnish-Swiss field station built for IGY in 1957/8. The base is in rather good shape considering it has been only sporadically visited over the decades by cruise ships and occasional scientific expeditions, in large part due to periodic maintenance by the Svalbard governor. The base is the only place that groups of 20 or more may be accommodated in Nordaustlandet, and hence is of value for emergency shelter – an increasingly important consideration with the expansion of tourism facilitated by ever decreasing sea ice in the Barents Sea.

My main involvement with the project is leading the ice core drilling on one of the largest ice caps outside Greenland in the Northern Hemisphere: Vestfonna. The ice cap in spring is characterized by rapidly changing weather with fierce winds, high humidity and temperatures varying from -30 to -10C. This is however the best period to ice core drill, as summer means surface transport is very difficult as snow disappears from the bare rocky ground very quickly in May, and warming temperatures result in high risk of drills being trapped deep in the ice by re-freezing of any water on the drill.

In April this year, a 6 person drilling team was part of a larger 15 person field group sent to Kinnvika by a Norwegian helicopter from Longyearbyen. The drilling camp was established after a radar survey carried out by researchers from Uppsala University located a place on the central ice cap with 300 m of ice lying above flat bedrock. This was about 3 km from where the helicopters had dropped off the drilling cargo, and about 40 km from the Kinnvika station. After a few days of stormy weather, a window occurred when all the expedition members drove on snow mobiles to set up the camp. However, the good weather window did not last long and before many hours had passed, the wind was blowing and the snow drifting again. Sadly during all the effort of transporting cargo, various items were lost, or damaged. This was not apparent to the drill team left on the ice, who were forced to lie around feeling cold, useless and increasingly sick with flu-like symptoms for 8 days as the storm raged. The team slipped surreally into an anti-phase time zone waking at 4 pm and eating dinner at 4 am, becoming isolated from the rest of the world in a cocoon of milky violence.

The first good days of weather saw increasingly desperate attempts to find lost equipment, and fix broken items. Solutions were cleverly improvised and made

to work almost by will-power alone, only for the next step to be frustrated by further damaged equipment. In the mean time the (non) drilling team were kept supplied with food and fuel by the rest of the expedition based at Kinnvika.

Unfortunately the drilling project was a litany of bad luck. I was unable to take part at all due to a skiing accident injuring my neck. The team that went up was a 50% mix of young PhD students and experienced old field workers. However few anticipated the full severity of Vestfonna weather. Vestfonna is a place that taxes even very experienced personnel- and since more experience also means older age, that sometimes leads to reduced tolerance for extremes than was possible in their younger days. The young people lacked experience, but had enthusiasm in spades, and now, with no ice core to analyze must deal with the impact on

their PhDs. At least, being in the field they saw first-hand exactly the difficulties involved in getting the raw material for their studies. If they had remained at home, merely expecting ice to be delivered mysteriously from afar, it is likely they would never have a true understanding of how risky and difficult drilling is.

The impact of the lack of ice coring results on the Kinnvika project itself is worth considering. The financial loss was largely born by my group in Finland, the effort and skill involved a much wider group, including a wider group than those in the field. The culmination of 3-5 years of planning mostly by ourselves and the Uppsala University group, and more than one year of preparation work was unsuccessful, and I think engineers and project scientists who see a space rocket explode on

the launch pad probably experience some similar feelings to those we all felt. Naturally we want to determine exactly what went wrong. That means examining all the preparation work, the composition of the field crews, and the back-up plans that were made and executed.

We are planning to try again next spring. The preparation will be different, both equipment and people will be more thoroughly tested. Though the cemeteries are full of indispensable men, it does seem that occasionally there are specific people with mission critical skill sets. The training the younger researchers receive and the hardening they get from the cold hammer of the blizzards on the ice anvil of Nordaustlandet, should produce a capable next generation of field scientists, able to survive and scientifically prosper anywhere in the polar world.



Kinnvika researcher on site in Vestfonna ice cap, Svalbard / Emilie Beaudon



The CYSC is in constant need for partners and dissemination of its initiatives. They welcome new members and can be reached at cysc@ualberta.ca.

Tourism in Rovaniemi, Finland./ Juha Ignatius

Engaging Northern Canadian Youth: The Canadian Youth Steering Committee and their Time Capsule Project

Harry Borlase, Member, Canadian Youth Steering Committee, Canada

Although separated by thousands of kilometres of ice and snow, Canadian northern youth have found a home in IPY. Representing the interests of these youth nationally and helping them to become organized locally, is a group of more than 50 motivated university student researchers who volunteer with the Canadian Youth Steering Committee (CYSC).

Like many other organizations affiliated with IPY globally, the CYSC represents the student component of the Canadian IPY National Committee. This team of researchers and northern enthusiasts from across Canada organize and operate a number of projects aimed at improving northern youth's awareness and opportunity in their unique communities and regions.

The CYSC has placed particular importance on engaging young northerners both within the structural organization of the Committee as well as their projects. In order to accomplish this, the group has been recruiting high school ambassadors from northern schools who are asked to share communications and opportunities about IPY with their peers and community. Current co-chair of the CYSC Isabelle Turcotte, graduate student at the University of Alberta, explains:

"High school ambassadors and other northern communities' champions, may they be adult or youth, are key partners to have in order to share IPY opportunities with the human North. Ever if the Internet is becoming more common in Northern communities, word of mouth and face-to-face meeting are still the only way to guarantee northern youth participation in the IPY. None of our CYSC initiatives would yield fruit without dedicated educators, enthusiastic youth, and devoted young Arctic researchers."

The CYSC has narrowed its focus to three main initiatives: Education & Outreach, Time Capsule, and Grassroots. Recently, the time capsule project was selected for funding from the Government of Canada Program for IPY in their Communication

and Outreach Component. This was a huge success for the CYSC who have been striving since their establishment in 2006 to generate the necessary financial support to realize their projects. The time capsule's objective to engage northern youth in their surroundings in a way that can be preserved and cherished was a perfect fit for IPY's commitment to legacy.

The time capsule organizing team have a number of activities planned which are aimed at giving a voice to young northerners, and helping them to become active and celebrated in IPY. The team has planned a photo contest which encourages northern youth to take pictures of anything that reflects their life in the north, as well as an online survey through which northern youth can share their experiences with one another. Furthermore, the highlight of the project will be an accumulation of photography, artwork and creative writing from northern Canadian youth which will be compiled into a time capsule, to be sealed and then opened in the next 50 years. The aim of the project is to document the region through the eyes of northern youth, thus expanding IPY's research to younger generations.

"The IPY will show the Arctic through the eyes of researchers, Elders, local community leaders and federal politicians, but what about the youth?" asks Time Capsule co-director Julia Christensen. "Our goal in organizing the Time Capsule is to ensure that northern youth are meaningfully involved. We believe their participation is absolutely essential to ensuring the lasting legacy of this IPY."

The Time Capsule Project, as well the CYSC Team, have made a number of strides forward in engaging northern youth and promoting research among younger scientists, a group which no longer stands separately from the larger IPY community.



Svalbard / Lars Kullerud

2007 IPY International Sea-Ice Summer School in Svalbard a Success

Barb Hameister, UArctic IPY Higher Education and Outreach Office, with the organizing committee of the International Sea-Ice Summer School, University of Alaska Fairbanks, US

During the first two weeks of July 2007, 92 participants from 16 different nations and 23 lecturers from 12 different nations gathered at the University Centre in Svalbard in Longyearbyen for the International Polar Year (IPY) International Sea-Ice Summer School. Sea ice physics, mechanics and dynamics provided the primary scientific focus, rounded out by marine ice fauna biology, biogeochemical processes, remote sensing and paleo-oceanography. A total of 66 hours of lectures were given along with two poster sessions. These activities were complemented by a busy social programme that allowed everyone to get to know each other and to talk about the latest in sea-ice research.

The idea for the summer school was born in 2004 during a conversation between former UNIS students Dirk Notz and Karolina Widell, as they sat together one evening in Longyearbyen after fieldwork and realized that few scientists really know very much about sea ice. Though considered to be of great importance in climate, sea ice is poorly represented in global climate models and many aspects of it remain to be investigated. So, they thought, why not gather experts and students in Svalbard and just talk about

sea ice and global climate change for a while?

There was an overwhelming response both from the invited speakers and from students who were interested in attending: more than 170 student applications were received, nearly twice the number that could be accepted. This enthusiasm prevailed throughout the two very busy weeks, with the mid-night sun, good weather and stimulating exchange doing their part to keep the energy level high among all participants.

The aim of the summer school was to gather the world's foremost experts in the field, to educate tomorrow's sea-ice experts, and to inspire and stimulate networking and cooperation within the sea-ice research community. The organizers are hopeful that the excitement generated at the school will have a lasting effect on the coming years of sea-ice research. They anticipate that the summer-school website will become one of the central sources of sea-ice-related information, and provide a platform for students and scientists alike to keep the spirit of the summer school alive for years to come. In addition, one very tangible legacy of the summer school is a textbook

due out later this year (available through the website) that summarizes most of the lectures, thereby extending many of the benefits of the school to those who were unable to attend.

The International Sea-Ice Summer School was made possible by funding from the EU research project DAMOCLES and the Norwegian Research Council through two IPY projects, iAOOS Norway and BIAC. Additional funding was provided by the Nordic Council of Ministers and both Norwegian and international research institutions.

www.seaice.info



Svalbard / Sigmund Spelkavik, UNIS





Waterfall in Norway / Paavo Hamunen

Understanding the Effects of Global Change on a Fading Language

Jenn Wagaman, Research Services, University of Alaska Fairbanks, US

Lisa Scerbak, Development Officer, University of Alaska Fairbanks, US

Linguist Olga Lovick took a detour while studying Russian literature at the University of Cologne, Germany, that led her to the University of Alaska Fairbanks and a prestigious postdoctoral research project for the International Polar Year.

After studying Latin, classical Greek, French and even Apache, her fascination with languages-how different they are, and how complex they can be-brought her to the Upper Tanana Valley to study Athabascan, which is closely related to Apache.

"The Athabascan languages have the reputation of being some of the world's hardest languages," says Lovick, who is undaunted as she sets out on her mission to document the effects of global change on the language.

"Then of course there are the effects of climate change, which impacts the Athabascan way of life considerably. This year they got approximately the same amount of snow that Fairbanks did, which made trapping incredibly hard, so that trapping was pretty much impossible. The caribou will have changed, so they could not hunt for caribou anymore where they used to. And there are less moose in the area. Pretty much everything has changed there."

"There is a high chance that my research from today is going to be a major part of everything that exists about Upper Tanana language, so then it may become one of the few sources to learn about the language."

"What I'm working on is how they talk about the change in the language."

She's compiling a booklet in the Upper Tanana language with English translations, describing climate change and how it impacts their lives, right down to the impacts on the language itself. *"Because the language is, of course, changing. It is also dying,"* she notes.

"In Upper Tanana, you have fewer than 100 speakers. Whenever somebody passes on, not only is it a person that you lose, but also one very big percentage of the knowledge that is being lost."

Not only do fewer people speak Native languages, but there is also a wealth of vocabulary being lost, as is evident even in the tales of the well-known Dena'ina storyteller Shem Pete. If her efforts to revitalize the dialect succeed, Lovick sees her work as having the potential to raise awareness of language loss through the high-profile nature of IPY, and to inspire younger generations to start learning from elders, before it's too late.

"There are about 6,000 languages spoken in the world, and the estimate is that maybe 600 of them will see the next century," While she notes that a small village of speakers might not have much of a role in the big picture, she sees benefits to individuals and communities that can have a positive ripple effect.

"IPY benefits communities by getting attention, by getting publicity, because there is definitely a sense of powerlessness," she says. *"These people are facing not only language loss but also cultural loss, and that has very big impacts on their identity."*

Admittedly, it's a big project with historic implications. *"There is a high chance that my research from today is going to be a major part of everything that exists about Upper Tanana language, so then it may become one of the few sources to learn about the language."* In a happier scenario, she says, it could be used to continue teaching the language and, hopefully, the part that deals with climate research will be used to document how things were in 2007.



Snow grouse in Savukoski, Finland / Antti Saraja



Daria Burnasheva while on a north2north exchange in Norway

Student Profile

Daria Burnasheva

Daria Burnasheva is one of several Bachelor of Circumpolar Studies (BCS) students at Yakutsk State University in Yakutsk, Russia. The third year English Major is an eager student, who has participated in online BCS courses for the past two years. When asked what she likes best about studying BCS, Daria replied:

"The communication and discussion with others, improving my skills of writing and understanding; I learn to express my opinions! BCS is very different from my experiences as a student. I feel more free, I am sure that my opinion will be heard, there is a great field for self-realization and many opportunities. And there is a greater responsibility, because I represent not only myself as a student, but my university, my republic and my country... I believe that everyone who lives in the North should know about their environment, the history of the Arctic and contemporary issues and problems of it. It is necessary today. I have enjoyed studying the Arctic because I learn a lot, and even though I live in the North, BCS has opened a new world – the world of Arctic. And this world is wonderful. BCS has made me feel as a part of one big community, one environment, one mentality, one Arctic! I wish that everyone who lives in the North could feel the same!"

Integrated Graduate Research Training on Resilience and Adaptation of the Arctic System

Gary Kofinas and Karen Hibbard-Rode, UAF RAP Project, University of Alaska Fairbanks, US

The Resilience and Adaptation Program (RAP) at the University of Alaska Fairbanks (UAF) trains PhD and Master's students to do integrated research on social-ecological systems and issues of Arctic sustainability. A central focus of the program is local and global interactions in a rapidly changing North. Funding is provided through the U.S. National Science Foundation's Integrative Graduate Education and Research Training (IGERT) grants for ten years (two 5-year grants have been awarded).



Caribou and Trans-Alaska Pipeline / Gary Kofinas



Stacia Backensto, Kenai Fjords National Park, Alaska / Timothy Thomas

We see three main opportunities and goals for RAP and UArctic during the IPY:

- 1) To give students of the Resilience and Adaptation Program formal training in research that leads to a better understanding of the resilience, adaptation, and transformation of social-ecological systems in a circumpolar and international context.
- 2) To draw on the extensive yet diverse expertise of scholars and institutions which have programs in northern studies, to enrich students' training and research experience.
- 3) To create a legacy that lasts beyond IPY by creating a consortium of PhD granting institutions that are focused on resilience and rapid change of social-ecological systems of the North.

In 2006 RAP initiated a bridging program with the College of Rural and Community Development (CRCD) at UAF, which supports Alaska Native students wishing to obtain PhD training in a culturally appropriate environment, and provides an oppor-

tunity for CRCD faculty to work collaboratively with faculty familiar with the PhD process. Many of the prospective Alaska Native PhD students are currently leaders in their own communities who seek tools to make their communities more economically and culturally viable.

RAP has also established formal partnerships with other institutions interested in social-ecological resilience and will cooperate as a consortium, supported by UAF and the UArctic. RAP PhD students all conduct international internships and will draw on the program's network of circumpolar contacts and the UArctic IPY Higher Education and Outreach office to design their internships, depending on their own needs and interests.

In the summer of 2009 and 2011, RAP will offer a two-week field course involving field studies along a transect from Anchorage to Prudhoe Bay, focusing on the social-ecological dynamics of a rapidly changing North as emerging in urban, rural, and industrial environments of the state. The course will be open to all graduate students, Arctic and non-Arctic (funding for non-IGERT students will come from the UArctic and the students' home institutions).

The future holds many opportunities for connections and collaborations between UArctic and RAP. RAP is seeking international opportunities for RAP students, as researchers and/or as visiting students at other institutions, and the current IGERT grant provides funding for new trainees to have an international internship experience. Graduate students from other universities are invited to join the RAP. We do not have funding for non-US citizens to study at UAF, but welcome those who can self-fund and would like to join us. Graduate students in other programs may benefit from joining us for a year, being a part of our community, and taking our two core courses.

Further information is available from Catherine Seymour, RAP Coordinator (catherine.seymour@uaf.edu); Prof. Gary Kofinas, PI and Director (ffgpk@uaf.edu); Prof. Terry Chapin (ffsc@uaf.edu), Co-PI; and the RAP website at

www.rap.uaf.edu

The UArctic Atlas: Giving the World a Circumpolar View

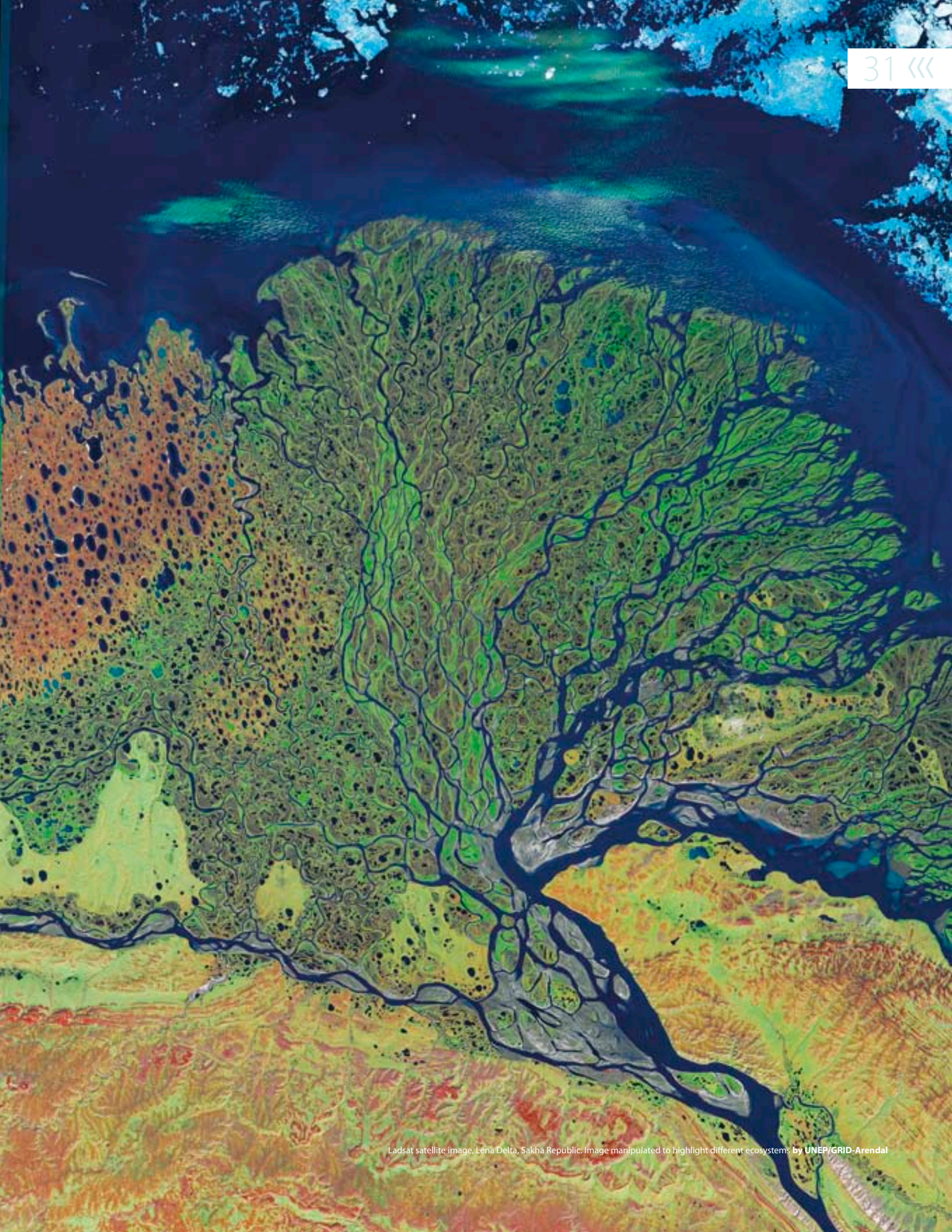
Scott Forrest, Atlas Project Manager

The circumpolar map has a unique ability to powerfully and instantly align the mind of anyone who sees it. In its development and its teaching of students, the University of the Arctic has put the circumpolar map to effective use as an educational tool. Now, with the UArctic Atlas, we will be able to make that map interactive and three dimensional, using online mapping technologies like Google Earth. The UArctic Atlas is being designed as a learning resource both for UArctic students and anyone else interested in the region. It will present a visual and geographic overview of the Arctic region, including its physical environment and socio-cultural life. Each feature or dimension will be represented in what as known as a layer, which users of the UArctic Atlas will be able to select and combine, change perspectives, and customize the look of their map. For instance, a student researching the impact of oil and gas on reindeer herding in Yamal would be able to combine a layer of oil and gas drilling sites with a layer of reindeer migration routes to understand potential sites of conflict. She could then capture her custom map for use in a report or classroom presentation.

An initial prototype of the UArctic Atlas will be launched later in 2008, using a selection of readily-available information, with the full product ready in 2009. Stay posted at www.uarctic.org for Atlas updates, including demo presentations.



Sitka, Alaska / Kristin Thompson



IPY IV: Context and Promise - An Online Course

Amanda Graham, Instructor for International Polar Year IV: Context and Promise course, offered in affiliation with Yukon College and the University of the Arctic, Yukon College, Canada

Whether it was to be thought of as the third (as the Russians initially termed it) or the fourth of its kind, the current International Polar Year is a remarkable event. It is of enormous significance. As such, it deserved to be explored in some detail. The Yukon College online course “The International Polar Year IV: Context and Promise” was created to do just that.

Canadian researchers had been talking about another polar year since some time in 2002. Others had been thinking about some sort of IGY 50th anniversary. By early 2005, it was clear to one working in northern circumpolar studies that the enterprise was going ahead. It was going to need to be covered in the courses I teach. It was going to be happening around us. I began to scour the Internet for the back-story to IPY 2007-2008. Its antecedent Years were mentioned again and again in the brief notes I found online but the details were frustratingly vague. William Barr’s book on the stations of the First International Polar Year (AINA, 1985, second edition, 2008) revealed something of the human side of life at the stations but not much about the legacy of the International Arctic Expedition, as it was called at the time in some newspapers. As he pointed out in the introduction, the Greely expedition got most of the English-language press. They did a lot of exploring and then there was the loss of most of the party. I also found that there is remarkably little available on the Second IPY. The social and economic conditions of the time and World War II forced the achievements of the thousands of observers scattered across the globe (stations around the world contributed) into the background. The work of the committee formed to tidy up the loose ends after the war is practically invisible.

The International Geophysical Year is exceedingly well documented. From the famous dinner party to Sputnik, Cold War tensions and post-war technologies, the formative meetings and the results are detailed and extensive. It was an exciting enterprise and it got a lot of press. It energized a generation of polar scientists and added Antarctica to public consciousness. It awakened enthusiasm for space and technology and opened up possibilities for individuals, disciplines and nations.

The current IPY is the descendent of these three international cooperative polar science ventures but it, as they were themselves, is not all that closely related. Yes, it is an international cooperative scientific enterprise focused on the polar regions. Yes, it is called the “International Polar Year.” But it, as each of the previous Years were, is also an indication of the times. I am being very general, here, but the first polar year was primarily about Arctic weather and geomagnetism. The second was about weather and atmospheric studies because radio and aviation needed better understanding. The IGY was about geophysics, the solar system and space and Antarctica (cooperation was much harder to achieve in the Arctic). This one is about many of those, too, but its focus is climate and other change and people. In each of the Years we see reflected the concerns of the period.

The course is not, strictly speaking, about the sciences. It is, rather, about the contexts in which the polar years came about and the promise that each held up to the public of the day. There is a bit of history of science and a bit of polar exploration history. There is a bit about regulation and ethics of polar research. There is a lot about the planning and execution of the current polar year. There is room for discussing the role of communications technologies in public awareness of the polar years. There is room for making this course a point of departure for talking about polar research in general.

The next online offering of this course runs in the Fall 2008. See <http://dl1.yukoncollege.yk.ca/ipy> for details and news about polar research.



Frozen mast / Juha Ignatius



Timber depot / Veli-Pekka Laitinen



Emilie Beaudon near Adelie Land, Antarctica / Didier Boutonnet

Student Profile

Emilie Beaudon

"In 25 years, the Arctic environment may have tremendously changed with the disappearing Arctic ice cap. Issues will be completely different, especially in glaciology and cryospheric researches. After the exploration and mapping era, after climate and environmental monitoring, will the next IPY be dedicated to fresh water or oil reserves sharing? Will most of our programs then include the tourism issue? What would be the meaning of organising an IPY in 2033? At that time, I wish I could be a recognized climate and glaciology specialist which could defend environment interests by providing correct and accurate information to political decision-makers. I wish I could work for the renewal of the Antarctic treaty as well as for the development of the same kind of conservation treaty concerning the Arctic basin and Greenland. During the next IPY, I would also lead my own project and field work in one of the 2 Polar Regions on Earth but also conduct an important sampling project on the Mars ice cap. I would also strive for a larger cooperation between scientists (technicians and researchers), philosophers and politicians by organising an international forum/consortium about IPY issues."

Emilie Beaudon, PhD candidate at the University of Oulu, reflecting on the possibilities for the next IPY and her ambition for being involved in it.



Salmon boat, Alakongas, Tana river, Utsjoki / Pekka Antikainen



Snow grouse hunter, Utsjoki / Pekka Antikainen



Hay bales in Tana river valley, Norja / Jaakko Alatalo

North by 2020:

A Forum for Local and Global Perspectives on the North

North by 2020 Executive Committee (Hajo Eicken, Anita Hartmann, Amy Lovecraft) and theme leaders, University of Alaska Fairbanks, US

The Fourth International Polar Year 2007-09 is focusing the world's attention on major interconnected transformations that are underway in the polar regions, including regime shifts in climate and the environment that are unprecedented in the historical and recent geological record. These include sweeping effects of change, particularly on northern populations and cultures, the expansion of global geopolitical and economic interests into the North as well as increasing interdependence between the Arctic region and global processes.

North by 2020 is a forum designed to bring together scholars, scientists and educators from the University of Alaska and other key partners, recognized stakeholders, and outside experts as well as the broader public, to jointly assess the challenges facing the North, to envision futures for our region, and to seize emerging opportunities. Thus North by 2020 is a forum to explore, discuss, plan and prepare opportunities for sustainable development in a North which is experiencing rapid transformation. The forum functions as a vehicle for facilitating research and education across disciplinary boundaries to address real world concerns surrounding northern futures while at the same time engaging public, private, and government stakeholders. North by 2020 coordinates its diverse projects using a structure built of six themes, each led by an interdisciplinary working group:

- Coastal and offshore oil and gas development: Balancing competing interests through enhancing information and synthesis
- Freshwater Systems: Understanding Change in Alaska and the Arctic
- Living Marine Resources: Evolution of living resources and resource-dependent systems in response to rapid external forcing
- Communities and Infrastructure in a Changing Coastal Environment
- The Interface between Indigenous and Local Knowledge and Western Science
- Resilient Communities: Food Security, Communication and Health in a Changing North

A seventh, overarching theme, The North as a Complex System: Synthesis and Futures, seeks to draw from the experiences and findings of these six themes, and others, to synthesize the major findings of IPY as they relate to Alaska, the Arctic, and the world. Necessarily, the work of this group will extend beyond the closing ceremony of IPY-4.

North by 2020 is an initiative of the University of Alaska IPY Research Committee that builds on integrated research at the University of Alaska. Its Executive Committee consists of Hajo Eicken, Director; Amy Lovecraft, Associate Director; and Anita Hartmann, Associate Director.

www.alaska.edu/ipy/north2020/main.xml





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